

780 CMR 34.00 EXISTING STRUCTURES

780 CMR 3408.0 STRUCTURAL REQUIREMENTS FOR EXISTING BUILDINGS

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3408.2 Definitions.

Basic Design Code. The building code in-force on the date of the application for the building permit for the original building. If subsequent changes have been made to the lateral force resisting system of the building and the changed lateral force resisting system conforms to the requirements for new construction of the building code in-force on the date of the application for the building permit for said changes, the basic code shall be the building code for the latest of such structural changes.

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3408.4.3 Level 2 Work. Work or change of use involving any of the following.

1. Change of use of an area which is more than 35% of the existing floor area of the building.
2. For Pre-1975 buildings, when rehabilitation or remodeling is accumulated over a floor area of 20,000 sf or 50% of the total floor area of the building, whichever is less, starting from ~~January 1, 2007~~ **July 1, 2008**. The terms rehabilitation and remodeling for the purposes of this clause shall mean any of the following work. removal or repair of ceilings, partitions, or interior facing of exterior walls; new ceilings, partitions, or interior facing of exterior walls; reconstruction or repair of floors; new mechanical or electrical distribution systems within an area; or new elevators, escalators, or stairs within an area or serving an area.

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5. Structural work involving any of the following.

A. ~~More than 25% of the total tributary area of horizontal framing members or 20,000 sf of tributary area of horizontal framing members, whichever is less, of any existing framed floor or roof~~ **More than 25% of the total existing framed floor and roof area or 20,000 sf of existing framed floor and roof area, whichever is less. Where the work involves existing beams or girders, the tributary area of the beams and girders shall be included in the count for framed floor and roof area..**

B. More than 25% of the total area of shear walls above the foundation.

C. More than 25% of the total length of columns and diagonal braces **measured to the intersection of the member centerlines.**

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6. Exemption for Pile Foundations.

Structural repairs of pile foundations are exempt from Level 2 Work.

3408.4.4 Level 3 Work. Structural work involving any of the following:

1. Removal, or removal and reconstruction, of between 15% and 40% of the total ~~tributary area of horizontal framing of existing framed floors and roofs~~ **existing framed floor and roof area. Where this work involves existing beams or girders, the tributary area of the beams and girders shall be included in the count of framed floor and roof area.**

Exception. Demolition of a previous addition to the building; demolition of an appendage to the building such as a loading dock outside of the exterior wall line; or demolition of a mechanical penthouse; with the condition that the demolition does not reduce the existing lateral load resistance of the remaining portion of the building below that provided before demolition.

2. New shear walls and vertical frames which provide more than 35 % of the lateral force resistance required for Level 2 Work, in either of two orthogonal directions.

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3408.4.6 Level 5 Work. Work involving any of the following.

1. The removal, or the removal and reconstruction,

of more than 40% of the total tributary area of horizontal framing of existing framed floors and roof. **existing framed floor and roof area. Where this work involves existing beams or girders, the tributary area of the beams and girders shall be included in the count of framed floor and roof area.**

Exception. Demolition of a previous addition to the building; demolition of an appendage to the building such as a loading dock outside of the exterior wall line; or demolition of a mechanical penthouse; with the condition that the demolition does not reduce the existing lateral load resistance of the remaining portion of the building below that provided before demolition.

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3408.7 Lateral Load for Existing Buildings and Structurally Attached Additions.

3408.7.1 Application of Lateral Load. Where the work includes structurally attached additions to an existing building, the specified lateral loads in 780 CMR 3408.7 shall be applied to the existing building and additions acting together as a single structure.

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3408.7.4 Level 3 Work. For Level 3 Work, each of the following lateral loads shall be applied to the building separately:

1. The wind load specified in Section 1609.
2. 35% of the seismic load specified in 780 CMR 1614.0 and 1615.0, in accordance with the seismic criteria of 780 CMR 1614.0, 1615.0, and 3408.10, with a minimum seismic base shear of ~~0.01W~~ **0.015W**.
3. For Post-1975 buildings, the seismic load in accordance with the seismic provisions for new buildings of the basic code.

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3408.9 Structural Design and Construction.

3408.9.1. Stiffness and Deflection Control. For Levels 2, 3, 4, and 5 Work, except for Level 2 Work where there are no changes to the existing lateral load resisting system, the building design shall comply with the following deflection criteria.

1. For seismic load on buildings with URM bearing or enclosure walls, the maximum inelastic story drift in the direction of the seismic load shall not exceed $0.007h$, where h is the story height. Inelastic story drift shall be calculated in accordance with ASCE 7, Section 9.5.5.7 or 9.5.6.6, except that the drift determination shall be made for each shear wall and vertical frame. The drift of URM bearing or enclosure walls perpendicular to the direction of the seismic load shall not exceed $0.010h$.
2. For wind load, or the lateral load defined in 780 CMR 3407.7.3, Item 2., on buildings with URM bearing or enclosure walls, the maximum story drift at each shear wall and vertical frame shall not exceed $0.002h$. The drift of URM bearing or enclosure walls perpendicular to the direction of the lateral load shall not exceed $0.0025h$. These values apply to unfactored load levels.
3. For seismic loads on buildings without URM bearing or enclosure walls, the maximum inelastic story drift shall ~~be calculated in accordance with ASCE 7, Section 9.5.5.7 or 9.5.6.6.~~ **comply with Section 9 of ASCE 7.**

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3408.10.2 Design Coefficients and Factors.

Values of the Response Modification Coefficient, R , System Over-strength Factor, S_o , and the Deflection Amplification Factor, C_d , for systems not permitted in 780 CMR 1615.0 shall be in accordance with Table 3408-1. Except as provided in Table 3408-1, there are no **specific** seismic design or detailing rules for the systems listed in the table.

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3409.3 ~~Partially~~ Preserved Buildings.

3409.3.1 State Building Code Provisions. A *preserved building* shall be subject to the following provisions.

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